

CLAIMS

We claim:

1. A subterranean structure, comprising:

a continuous ribbon slab having a plurality of flights fabricated from concrete, the ribbon slab defining periodic openings therein which generally align between adjacent flights.

2. The subterranean structure of claim 1, and wherein the flights are separated by a slab interval, the structure further comprising a fill material located in the slab interval.

3. The subterranean structure of claim 1, and wherein the periodic openings which are generally aligned between adjacent flights define a caisson, the structure further comprising a plurality of caisson liners, each caisson liner being located within an associated caisson.

4. The subterranean structure of claim 4, and wherein the caisson liners are filled with a fill material.

5. The subterranean structure of claim 1, and wherein the flights are defined by an outer perimeter and an inner perimeter, the structure further comprising outer sheet piling located at the outer perimeter of the flights and between adjacent flights.

6. The subterranean structure of claim 5, and further comprising inner sheet piling located at the inner perimeter of the flights and between adjacent flights.

7. The subterranean structure of claim 5, and further comprising a concrete wall attached to the outer sheet piling and facing the inner perimeter of the flights.

8. The subterranean structure of claim 7, and further comprising outer sheet piling located at the inner perimeter of the flights and between adjacent flights.

9. The subterranean structure of claim 8, and further comprising a concrete wall attached to the inner sheet piling and facing the inner perimeter of the flights.

1 10. The subterranean structure of claim 7, and further comprising a concrete wall
2 attached to the continuous ribbon slab at the inner perimeter of the flights.
3

4 11. The subterranean structure of claim 1, and wherein the flights are defined by an
5 outer perimeter and, when viewed in a plan view, the outer perimeter is in the shape of a
6 circle.
7

8 12. The subterranean structure of claim 1, and wherein the flights are defined by an
9 outer perimeter and, when viewed in a plan view, the outer perimeter is in the shape of a
10 polygon.
11

12 13. The subterranean structure of claim 1, and wherein the flights are each defined
13 by a slab width and a slab thickness, and each flight of the continuous spiral slab is
14 defined by a slab outside diameter, and the flights are separated from one another by a
15 slab interval, and further wherein at least one of the slab width, the slab thickness, the
16 slab outside diameter, or the slab interval is different between at least two adjacent
17 flights of the slab.
18

19 14. The subterranean structure of claim 1, and wherein the flights are each defined
20 by a width, and wherein the width of each subjacent flight is greater than the width of an
21 immediately-above flight.
22

23 15. The subterranean structure of claim 1, and wherein the flights are each defined
24 by a thickness, and wherein the thickness of each subjacent flight is greater than the
25 thickness of an immediately-above flight.
26

27 16. The subterranean structure of claim 1, and wherein each flight of the continuous
28 spiral slab is defined by an outside diameter, and wherein outside diameter of each
29 subjacent flight is greater than the outside diameter of an immediately-above flight.
30

31 17. A structure, comprising:
32 a building; and
33 a foundation which supports the building, the foundation comprising a continuous
34 ribbon slab having a plurality of flights fabricated from concrete.
35

- 1 18. A subterranean vessel, comprising:
2 a top and a bottom; and
3 a continuous closed wall connecting the top and the bottom, the wall comprising:
4 a continuous ribbon slab having a plurality of flights fabricated from
5 concrete and being defined by an inner perimeter; and
6 wall panels attached to the inner perimeter of the ribbon slab between the
7 top and the bottom.
8
- 9 19. A subterranean structure, comprising a plurality of interleaved continuous ribbon
10 slabs fabricated from concrete.
11
- 12 20. A method of fabricating a subterranean structure, comprising:
13 excavating soil to form a downward sloping ramp;
14 forming a concrete slab on the downward sloping ramp;
15 continuing to excavate soil to extend the downward sloping ramp to a location
16 under the concrete slab; and
17 continuing to form the concrete slab on the downward sloping ramp so that a
18 subterranean structure is formed having an essentially continuous concrete slab with a
19 first portion which is above and spaced-apart from a second portion.
20
- 21 21. The method of claim 20, and wherein the soil is excavated using a water jetting
22 process.
23
- 24 22. The method of claim 20, and wherein the second portion of the concrete slab is
25 generally in alignment with the first portion of the concrete slab, and the first and second
26 portions are defined by a continuous outer perimeter and a continuous inner perimeter,
27 the method further comprising joining the first and second portions with a wall element at
28 one of the inner or outer perimeters.
29
- 30 23. The method of claim 21, and wherein the wall element is a first wall element, the
31 method further comprising joining the first and second portions with a second wall
32 element at the other of the inner or outer perimeters.
33

1 24. The method of claim 23, and wherein the inner perimeter defines a closed inner
2 area of the subterranean structure, the method further comprising excavating soil out of
3 the closed inner area.

4
5 25. The method of claim 24, and further comprising placing a top over the closed
6 inner area.

7
8 26. The method of claim 20, and further comprising, prior to excavating, driving sheet
9 piling to define an inner perimeter and an outer perimeter for the continuous concrete
10 slab to thereby place the first and second portions in general vertical alignment with one
11 another.

12
13 27. The method of claim 26, and further comprising:

14 driving sheet piling downward from the second portion to further define the inner
15 and out perimeters;

16 continuing to excavate soil to extend the downward sloping ramp to a location
17 under the second portion of the concrete slab; and

18 continuing to form the concrete slab on the downward sloping ramp so that the
19 essentially continuous concrete slab has a third portion which is below and spaced-apart
20 from the second portion.

21
22 28. The method of claim 20, and further comprising forming generally aligned holes
23 in the first and second portions, and removing excavated soil by passing it upwards
24 through the generally aligned holes.

25
26 29. The method of claim 28, and further comprising:

27 placing a caisson liner through the generally aligned holes to define a caisson
28 between the first and second portions of the essentially continuous concrete slab; and

29 filling the space between the first and second portions outside of the caisson with
30 a fill material.

1 30. A subterranean structure, comprising:
2 a plurality of adjoined, spaced-apart concrete slabs positioned in a subterranean
3 excavation, the concrete slabs being generally vertically aligned to thereby define a
4 plurality of descending subterranean tunnels; and
5 a fill material at least partially filling the plurality of descending subterranean
6 tunnels.

7
8 31. A method of supporting a secondary structure, comprising:
9 forming a plurality of generally vertically aligned concrete slabs comprising an
10 uppermost slab and a lowermost slab; and
11 supporting the secondary structure on the uppermost slab.

12
13 32. The method of claim 31, and wherein the plurality of generally vertically aligned
14 concrete slabs are formed in a subterranean location.

15
16 33. The method of claim 31, and wherein:
17 each vertically aligned concrete slab, with the exception of the lowermost slab, is
18 associated with an immediately subjacent slab; and
19 selected ones of the vertically aligned concrete slabs are separated by an
20 immediately subjacent slab by a slab interval;
21 the method further comprising placing a fill material in the slab interval.

22
23 34. The method of claim 31, and wherein the plurality of generally vertically aligned
24 concrete slabs form a continuous slab.

25
26 35. The method of claim 31, and wherein the secondary structure is a building.